

Phenology Science Question

- Focus on Phenology of vegetation
 - Recognize that phenology covers broader topics (nectar flow, migration, etc.)
- When does the vegetation green-up / green down?
- What processes control the green-up and green-down of a canopy?
 - processes vary by vegetation type
 - Tropics: precip
 - Temperate: temperature
 - need an appropriate metric: LAI / fPAR, NDVI
 - length of season, beginning of season, peak greenup, area under the NDVI / LAI / etc curve (productivity)
- How does climate change modify phenology of vegetation?
- How do disturbances change / modify phenology of vegetation?

Data Needs (1)

- Focus on seasonal event (spring / fall; pick space, time)
- Spatial Resolution: point, 30-m
- Temporal Resolution: daily, weekly
 - Fuse daily MODIS and landsat to optimize time and space resolution
- Uncertainty of sensor (radiometric)
- Remote Sensing data:
 - ASTER, LandSAT, SAR
 - MODIS (LAI, FPAR, Vegetation Indices)
- Point Data: NPN, NEON
- Potential: SPOT 4, MISR

Data Needs (2)

- Weather data
 - NCEP, NARR, Daymet, point data
 - Temperature, precip, day length, net surface radiation
- Cover type / composition
- Disturbance history (fire, insects)
- PhenoCams at Flux towers
- NPN sites making measurements
- Soil characteristics (SMAP, point)
 - temperature, moisture
- Point litter fall data (related to LAI)
 - Related to leaf flush, new leaves, leaf age

Potential Sites

(based on phenocams, NPN, flux towers)

Solicit input from NPN, flux tower communities, EOS Validation sites

Potential sites:

- Bartlett
- Chibougamau
- Harvard
- GroundHog
- Howland
- Morgan Monroe
- Niwot Ridge
- UMBS
- Wind River (?)
- Silas Little (NJ)

Data Issues

- Defining data attributes
- Gaps, clouds, uncertainty, quality
 - Carefully prepared and flagged
- Fusing MODIS and LandSat

Regions / Continents / Global Data

Phenology WG Members

True phenology users

- Dave Hollinger
- Joanne Nightingale
- NEON – USER
- NPN representative (Geoff Henebry?)
- Kevin Gallo
- Possible members
 - Andrew Richardson, Harvard
 - Jeff Morisette, USGS
 - Jess Brown, USGS
 - Bill Hargrove, USFS
 - Kevin Schaefer, NSIDC

Schedule

- Near-term
 - Establish Phenology WG
 - Identify sites ($n = 6$)
 - Identify data / data attributes
 - Assemble site bundles
 - Iterate with WG
 - Examine regional / continental / global phenology bundles